REMARKS

The present application stands finally rejected per the Office Action dated May 29, 2003. The final rejection is in response to Applicants response dated February 4, 2003, which itself is in response to the Office Action dated November 4, 2002. The Final Rejection has been reviewed and the comments of the US Patent Office Considered.

As a result of the present amendments, claims 1-14 of record have been cancelled and replaced with new claims 15-58. The new claims include two independent claims: 15 and 37. The new claims correspond to and supercede the proposed claims provided to the Examiner during the in-person interview discussed below. Consideration of the new claims and remarks and prompt passage to issuance is respectfully requested.

Applicants wish to thank both Examiner Azarian and Primary Examiner Patel for their courtesy extended during an in-person interview on October 10, 2003. During the interview, the present application in light of the prior art reference Hiramatsu was discussed in detail. Potentially allowable subject matter was identified. In particular, the instant features of: transmitting manually entered characters back to OCR means, limiting the database according to the characters and querying the now limited database with the OCR means, a second time, were identified. It was noted that while Hiramatsu does have interaction between an encoder and a database, the relationship is substantially different. Namely, in the present invention, the determination of unread characters is ultimately made by the OCR means, whereas in Hiramatsu, the determination is made by the encoder. Applicants provided Examiner Azarian with a proposed set of claims, highlighting the above features.

Applicants wish to thank Examiner Azarian for the courtesy he extended during a telephone conversation on September 24, 2003. During the telephone conversation, Examiner Azarian indicated that the proposed new claims would in principle be allowable over Hiramatsu, however, an updated search is required. In light of the numerous changes to the originally filed claims, Examiner Azarian recommended that a continuation be filed. Accordingly, a Request for Continued Examination accompanies this response, along with new claims, amendments to the specification, and remarks.

Amendments to the Specification

Amendments were made to the specification to bring it more into conformance with English grammar and syntax as well as United States patent practice. No new matter was added. Given the number of corrections, a substitute specification was created.

A new Abstract of the Disclosure is included with this response. Consideration and entry of the Abstract is requested.

Claim Rejections – 35 USC §103

The Examiner rejected claims 1-14 under 35 USC §103 as being unpatentable over Hiramatsu *et al.* (U.S. Patent 5,697,504) in view of Danielson *et al.* (U.S. Patent 5,805,474). This rejection is traversed. Claims 1-14 have been cancelled by way of this amendment and replaced with new claims 15-58. Accordingly, this rejection is now believed moot. Claims 15-58 are believed allowable over the prior art of record at least for the reasons set out above. Applicants believe that a more thorough discussion of the prior art of record with respect to the currently pending claims would facilitated allowance of the present application.

Of the references relied upon for the outstanding rejection, Hiramatsu is the primary reference. The method of Hiramatsu is set out in figure 3. As depicted, a postal matter P is subject to an electronic reading 2 in order to determine a user code (zip code (41, figure 2, see user code area 43 (col. 3, lines 35-50)). If the code is not unambiguously read, an image is sent to a video coding apparatus 7 while the physical postal matter is held in a delay loop 4 (see col. 4, lines 39-50 and lines 58-61). At the video coding station, the encoder searches the postal matter for the missing information and manually enters it via a keyboard or the like (see col. 4, lines 51-57). Upon receipt of the coding information from the encoder, a bar code printer 3 is effected to print a bar code on the postal matter (see col. 4, lines 61-67). The bar code is subsequently read and the postal matter sorted accordingly (5, 6, figure 3). Accordingly, Hiramatsu relies upon the encoder to provide the missing information (in addition to the above, see col. 1, lines 13-16, 49-52, col. 2, lines 42-48, etc.).

The Examiner referred to column 5, lines 55-65 as an example of the retrying decoding with OCR means. This section of Hiramatsu discusses customary secondary

reader procedures wherein processing is performed again, by the OCR means, without intervention from the encoder. Rather, another reader and/or different algorithms are employed. This process is fundamentally different from the present invention wherein encoder input is used in the OCR means retrying steps.

In more detail and with reference to figure 7, a display device 32 (figure 5) displays for the encoder an image of the postal matter as taken by the initial scan. The image includes, among other things, an image display area 72 comprising specific user code candidate area 44 or 45, an image display area 73 of the specific user code location, user code input area 74, and the whole image itself 75 (see col. 7, line 66 – col. 8, line 5). Image display area 72 comprises the destination address 81 (col. 8, lines 19-27). Image display area 73 comprises other display areas 77 and 78, themselves comprising specific zip code 42 and specific address code location 43 (col. 8, lines 27-33), respectively. User code input area 74, displayed immediately below image display area 73, comprises a zip code input area 79 and an address code input area 80 (col. 8, lines 39-44). In zip code input area 79, the results of the zip code (42) scan are displayed. Likewise, in address code input area 80, the results of the address code scan are displayed (col. 8, lines 45-49).

In regards to unread characters, blank boxes are displayed and blinked until the encoder enters the missing information. The encoder determines which characters are missing, scans the display with all the information presented above to locate the missing characters, locates the missing characters and enters the missing characters in the appropriate blinking box (col. 10, lines 43 – col. 11, line 22). As the missing characters are entered by the encoder, the blinking of the blank boxes ends (col. 10, lines 51-54 and figure 11, col. 12, line 56 – col. 13, line 2). For purposes of emphasis, the Hiramatsu method determines only if a character was entered, and upon confirmation that a character was entered, halts the blinking (see steps of figure 11). Upon entry of the missing characters, the postal matter can be further processed.

In contrast, the present invention does not rely upon the encoder to complete the reading process and provide all the missing unambiguously read information. Rather, in the present invention, the encoder merely provides assistance to the OCR means and it is up to the OCR means to determine the missing characters. With reference to page 7, line 14 *et seq.* "In the case of a negative decision (No), the invention provides for another

automatic evaluation, the information obtained through video coding is available to the OCR processor in addition to the information shown on the image." Various embodiments on using this information is found throughout the specification.

The new independent claims, method claim 15 and apparatus claim 37, specifically recite retrying decoding with the OCR means. Such limitations are missing in Hiramatsu. Relevant portions of the claims are repeated below with emphasis on relevant language. Claim 15 reads:

- if said portion is not unambiguously decoded,
    i. transmitting said image to an video coding workstation;
    ii. manually entering a prespecified and fixed number of alpha/numeric characters following a predetermined coding rule;
    iii. **querying a database via a search based upon said fixed number of keystrokes;**
    iv. obtaining a limited set of database entries, said set limited by said search;
    v. transmitting said limited set back to said OCR means; and
- **retrying decoding of said image with said OCR means based upon said limited set so as to produce an unambiguously decoded portion.**

Claim 37 reads:

b. an OCR processor associated with said scanner and an address directory, said processor comprising means for receiving said image, means for decoding said image and means for determining if said decoding successfully arrived in a set of characters having a match in said address directory, **means for receiving rule based characters and for limiting a plurality of database entries based upon said rule based characters, means for redecoding said image** and means for determining if said redecoding successfully arrived in a set of characters having a match in said address directory; and

In the May 29, 2003 Final Rejection, the Examiner, argues that "And Fig. 8 to 10, column 3, lines 12-20, show the flow chart for image reader, after image reader fails to recognize, is corrected /input by video coding." Reference was then made to column 12, lines 38 – 64 which discusses verification of the encoder input data with a database. Hiramatsu continues in that regardless of whether the data is verified or not (found in the database or not), the code and information based thereon is transferred to a bar code and printed on the postal matter (see col. 12, lines 34-42).

Accordingly, in Hiramatsu, the encoder's entered information is merely confirmed or not confirmed via a look up in a database without participation by the OCR means.

In contrast to Hiramatsu, the instant method relies upon the OCR means to determine the corrected data. The encoder information is not subject to verification, and in fact serves a completely different purpose, namely, to limit the database entries. With a limited database search field, the probability of finding a match substantially increases.

At least for the reasons set out above, Hiramatsu does not disclose all the limitations of the independent claims. Further there is no suggestion within Hiramatsu or Danielson to modify Hiramatsu such that the Hiramatsu OCR means rather than the encoder determines and provides the missing information. The intent of Hiramatsu, as detailed throughout the patent (col. 1, lines 13-16, col. 1, lines 49-52; col. 2, lines 42-48, etc.), is for the encoder to perform the above detailed steps. Danielson does not discuss reusing an OCR means for data verification. Accordingly, Hiramatsu, alone or in combination with Danielson, is not available as a prior art reference. Therefore, reconsideration and withdrawal of the outstanding rejection in light of the above amendments and remarks is respectfully requested.

Conclusion

The present response is intended to correspond with the Revised Amendment Format. Applicants understand that with the Revised Amendment Format, the provisions of 37 CFR §1.121 are waived. Should any part of the present response not be in full compliance with the requirements of the Revised Amendment Format, the Examiner is asked to contact the undersigned for immediate correction.

In the event that the transmittal form is separated from this document and the Patent Office determines that an extension of time and/or other relief is required, Applicants petition for any required relief including extensions of time and authorize the Commissioner to charge the cost of such petitions and/or other fees in connection with the filing of this document to **Deposit Account No.: 502464** referencing **client reference:** 1996P08661WOUS. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

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~~WO97/49503~~ ~~PCT/EP97/02167~~
Rosenbaum et al.
1996P08661WOUS

METHOD OF PROCESSING POSTAL ITEMS

~~Description~~

FIELD OF THE INVENTION

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The invention relates to automatic letter processing and particular to systems, for which an automatic address reading method is supplemented and improved by the use of video coding.

BACKGROUND OF THE INVENTION

Automatic address reading systems (OCR) are well known in the field of letter processing and are described, for example, in ~~the~~ German Patent DE 195 31 392. Modern OCR letter sorting systems can achieve letter processing rates of 10 letters per second, meaning 36,000 letters per hour and more. However, the recognition reliability varies considerably, depending ~~on~~ upon the lettering style and total quality of the address information affixed to the letter surface. In case of successful recognition, the respective letter can be provided with a machine-readable bar code. This bar code permits a further mechanical processing up to a desired, optional sorting order. In particular, the use of bar codes permits a sorting of letters of up the sorting level of the postal run, for which the letters are sorted according to the distribution sequence used by the delivery person.

Owing to the fact that the recognition rates for automatic reading systems vary considerably, it is necessary to support ~~these~~ automatic necessary processes through various forms of manual intervention. The simplest intervention is that of rejection letters not readable in automatic reading systems and using a hand sorting process on them. However, the resulting expenses are uneconomically high, given the increas~~ing~~ in operational expenses. Added to this is the fact that a mechanical sorting of such postal goods is not possible without problems at a later point in time, ~~so that~~ for example, two separate flows of goods are created, which must then be combined again manually at a letter and specific point in time.

In order to avoid these disadvantages resulting from the manual sorting of OCR rejected items, various methods have been developed for ~~a~~ manually coding ~~of~~ postal goods. ~~All~~ These methods use operator intervention to affix bar codes to the items in a manner that is consistent with the requirement to carry out a mechanical sorting with the same machines that process OCR-read and bar-coded mail.

Another method for coding rejected postal items uses ~~so-called~~ manual or a manually operated coding stations. At these manually-operator, wherein the operator encodes enough information ~~for~~ from each of these items~~,~~ as is necessary to clearly identify the destination. For this, the input address is converted by means of a directory to a sorting bar code~~,~~ which is then affixed to the item. The coded items are subsequently processed further by means of bar code sorter (BCS), which are identical to OCR-suitable BCS. Manually operated coding stations of this type were first introduced by the US Post Office and Royal Mail during the 1970's. The main disadvantages of these types of systems ~~of this type~~ are the necessity to

remove items from the OCR flow of items and the ergonomic difficulties experienced by the operator when identifying items transported past the operator.

The next progressive step in the treatment of OCR-rejected items was the item development of an on-line video coding systems (OVS). In an OVS, a video image of the item is presented to the operator for coding in place of the physical items are held in delay loops. In these delay loops, the items are normally held in motion for an interval that is sufficient for the OVS operator to input the necessary sorting information for the respective image. The standard delay loop, the higher the costs as well as the requirements for maintenance and the physical size of the facility.

The main problem when using an OVS is that the available time is only sufficient for a careful input of the zip code (zip) or the postal code (pc), unless delay loops with an impractical length are used.

For ~~that~~ this reason, special coding methods were developed to keep the on-line delay time as low as possible.

In order to increase the coding productivity and/ore permit the listing of all address elements , meaning the zip code/postal code, street/post office box, addressee/post office box, addressee/firm, various state-of-the art methods have been developed. Essentially, these include:

Preview Coding

The preview coding involves a simultaneous displays of images from two items, one above the other. In this case, the lower image is the active one, meaning its data ~~are~~ is to be encoded first before encoding attention is paid to the upper image. Following a suitable training, ~~the~~ an encoding operators can encode ~~the~~ information present on the lower image while at the same time recording the address information from the upper image. The upper image subsequently becomes active and the process is continued accordingly. The preview recording permits a doubling of the operator productivity through a complete overlapping of the cognitive and the motorized functions during the coding of successive images.

Extraction Coding

Since only the zip postal code address elements can be input reliably by the operator, given the on-line delay times that are possible in practical operations, specific key components of the address components referring to the street are input during extraction code. The extraction coding normally is based on specially developed rules, for which a code window length is used as an access key to an address directory. For example, the Royal Mail uses an extraction formula that is based in the first three and the last two letters. In that case, the operator must memorize special rules to avoid superfluous address on formation and must take into account specific, differentiating characteristics, e.g. directions such as east, west ore categories such as long as street, lane, road.

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Despite a certain effectiveness, the extraction coding has several considerable disadvantages. In particular, it has complex extraction rules, which frequently require taking

into account the end of a street name, an address ~~while these~~ components which is normally ~~are~~ written with the least amount of clarity. ~~They~~ The extraction coding also involves a significantly high rate of extraction that are not clear and ~~for~~ to which several entries in a dictionary correspond. Accordingly, ~~to the extraction code, so that~~ a clear sorting decision cannot always be made. Furthermore, it must be taken into account that the input productivity of the operators is reduced as soon as the operator must make a decisions rather than ~~instead of performing~~ a simpler, task such as repetitive keyboard entry.

Completion Coding

In contrast to extraction coding, a variable input is made for the completion coding of each address directory, until both clearly coincide. An acceleration effect is achieved by displaying the remainder of the address as soon as it is recognized from within the directory. However, with this technology problems occur in that an input stop signal must be transmitted to the operator and illustration of the identified remainder of the address is necessary. As a result a reduced input productivity occurs and preview coding is prevented.

Operator-Assisted OCR Technology

The US Postal Service has experimented with operator-assisted OCR techniques to increase the address information to be processed on-line. In this case, the portion of the address image, for which the OCR identification has failed, is emphasized so as to increase ~~the~~ effectiveness. Since the operators are slow when deciphering missing letters and since in

part complex identification errors, (e.g. segmentation problems), occur as well, the operator productivity with this method is frequently lower than with a simple re-entering of the respective address.

Off-line Coding

Since a sufficiently high productivity for on-line coding cannot be achieved with any of the above-mentioned coding techniques, an off-line coding system was recently introduced, e.g. as described in the US Patent 4,992,649. As disclosed, items with unidentified addresses are provided with an additional information such as a tracking identification (TID). The unidentified items are stored extemally while the images of these items are presented to operators for coding Here, the operator is free from time limits normally associated with on-line coding. The items are subsequently presented to TID readers. The TID is like to the entered address information. Accordingly, a standard bar code sorting information can also be affixed to the item , so that the respective item can be processed in the same was as items that are normally OCR-read. Even though the off-line video coding method is an effective method for cording all address components, the further processing of items with addresses that have not been read requires additional capacities and a correspondingly complex logistic.

BRIEF SUMMARY OF THE INVENTION

It is the object of the present invention, to achieve the highest possible on-line coding letter items and the lowest possible rate of items where the address has not been read

successfully. This and other objects are achieved by the present invention. The present invention permits an improved integration of automatic reading systems and video coding. The invention furthermore permits the effective use of an extraction coding in integrated, automatic and video coding systems, in particular it permits a simplification of the decision problem for the operator during the address coding. Another advantage of the method according to the invention is that additional sorting information can be evaluated effectively, e.g. information referring to the name line in the address. The invention has the added advantage of making it possible to deal effectively with inconsistencies, which can result, for example, from the extraction coding or from inscription errors made by the sender. The method also permits a simple integration of on-line and off-line coding, as well as the preview coding method.

BRIEF DESCRIPTION OF THE ~~FIGURES~~ SEVERAL VIEWS OF THE DRAWINGS

~~Advantageous embodiments of the invention following with the aid of exemplary embodiment and drawings. In detail, these show:~~

The novel features and method steps believed characteristic of the invention are set out in the claims below. The invention itself, however, as well as other features and advantages thereof, are best understood by reference to the detailed description, which follows, when read in conjunction with the accompanying drawing, wherein:

Figure 1 depicts a ~~A~~ schematic representation of a device for carrying out the method; and Figures 2 and 3 depict an ~~An~~ overview of the data flow according to the invention.

DETAILED DESCRIPTION OF THE INVENTION

Figure 1 shows a schematic representation of a letter distribution facility for implementing the method according to the invention. The OCR letter sort 100 comprises a feeding device 110, which pulls successive goods from a magazine 111 and transports these at approximately 10 goods per second to a high-resolution video scanner 120. Following this, the items are transported along a delay loop 121. The goods normally have address information on their surfaces. The OCR processor 130 is used for an evaluation the address information on the images for the goods, obtained with the video scanner 120. If the evaluation is completed, a bar code printer 150 is actuated and the item is provided with a corresponding bar code for the subsequent sorting into sorting compartments 160.

The OCR processor 130 comprises one or several microprocessors 131 with associated memory 132 for storing the images of the goods. The OCR processor furthermore comprises an address directory 134 with zip codes, city names and street names and possibly additional address-related information. During the evaluation of the images containing address information, a reduction, controlled by characteristics, of the entry obtained through the address directory occurs, such that a sort of partial ~~dictionary~~ directory is created. Reliability factors are associated during the individual entries, so that during the evaluation a number of data from correctly identified addresses are generated. The device furthermore contains an image controller 170, as well as a number of video coding stations 200, which are connected directly to the image controller 170 or via local area network (LAN) 171. If the OCR evaluation of an image is not or not completely successful, this image is transferred from the

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OCR processor 130 to the image controller 170, which controls on the one hand the TID bar code printer 151 and, on the other hand, sends the corresponding image to one of the video coding stations 200. The TID bar code printer 151 affixes an identification code TID to the corresponding item, which makes it possible to link the evaluated address information at a later time to a physical item. In that case, the images are preferably evaluated off-line, even though an on-line evaluation though video coding is basically possible, given a sufficiently long delay time. In the latter case, the TID can also be affixed to the goods at a later point in time, meaning if the video coding did not result in a complete evaluation within a predetermined, specific time interval.

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In order to implement another ~~and better illustrated~~ method, the image controller 170 is designed such that address information, which is not completely (i.e. successfully) evaluated by the video coding, is supplied to another automatic address evaluation device, using the results from the video coding in the OCR processor.

Figures 2 and 3 depict data-flow diagrams. The operators preferably work with divided displays 210. By way of application, the divided displays 210 may comprise an upper and a lower screen, wherein, for example, the upper screen permits previewing while the lower screen permits active coding. Data input by operator is shown in prompt line 211. Images of items that were not completely evaluated automatically are transmitted to the video coding 220. The example in Figure 2 depicts the input of a zip code "4431," an extraction code for the street name "Hell," as well as the house number "8." Display forms other than divided display can be used as well. This input information is used to identify matching entries in the address directors 134. A complete evaluation of the address information of the

respective image basically has occurred if a clear coordination between the input information and an entry in address directory 134 was found. However, such an unambiguous coordination cannot be achieved for a certain percentage of entries because a number of different address entries correspond to the coded address information.

According to Figure 3, a decision 300 is made to decide whether the address information of an image was evaluated completely during the video coding. If the decision is positive (Yes), then the respective item can be provided either with a bar code if the delay time is sufficient to carry out an on-line video coding, or a corresponding linking takes place between the TID and a bar coding, based thereon. In any case, the respective item can be sorted further via standard means. In case of a negative decision (No), the invention provides for another automatic evaluation by using the results of the video coding, meaning that for this further automatic evaluation, the information obtained through video is available to the OCR processor in addition to the information shown on the image. In the above example, this is the triple information "4432," "Hell," "8." In figure 3, this is expressed symbolically by the content of circle 310. This is followed by a decision 320 on whether a complete evaluation of the respective image has taken place. In the positive case (Yes), the respective information is used for the further sorting of the item, in the same was as following a positive decision at decision point 300. If the decision is negative (No), another video coding takes place using the results of the additional automatic evaluation. In this case, the operator is preferably presented with a number of alternatives to be selected, from which a selection must be made.

It is preferable if the last two stages of the method, namely the additional automatic evaluation as well as the additional video coding, do not take place on-line, but off-line because the available delay time is too short for an on-line implementation.

The method according to the invention thus contains three phases that act in combination. These are:

1. The phase for data input through video coding, where a coding of certain parts of the address information takes place, preferably with a simple extraction code. During this process, the zip/postal code information as well as a larger portion of the additional address information is normally evaluated completely or the locality names are extracted if the zip/postal code is missing. A first automatic evaluation of the address information already preceded this phase. The input is preferably shown with a divided display. In order to simplify the input, a simple extraction code is used, e.g. a 4-digit postal code, the first four alpha characters of the street name and the digits for the house numbers of the respective addresses. With this extraction coding, an adaptation to the respective postal conventions is possible without problems. For example, the number of first letters can be varied. Preferably, the operator will input the postal code only if the OCR evaluation did not show any result at all. Thus, the input of street information will apply to most of the postal goods. A structuring of the video coding preferably can also occur in that one group of operators enters the postal code and street information while another group enters street information only. Since a specific percentage of the mail nowadays contains post office box information, a suitable key space on the keyboard should preferably be assigned as a post office box key, which can be depressed by the operator if necessary. Following this, the post office box

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number is entered. With company addresses, which lack street data or post office box data, it is also possible to enter the company line.

2. A second phase comprises a ~~F~~further automatic evaluation, using information that was entered during the previous phase with the aid of video coding. The additional information increases the probability of a complete evaluation takes place if the address information was not evaluated completely during the preceding phase. If an extraction code is used, two or more entries for the address exist in the address directory. With a suitable extraction cording, only two address entries exist for more than 90% of the cases.

3. A third phase comprises an additional video cording of those images which could not be evaluated completely during the previous phases. Images of the non-evaluated addresses are preferably presented to the operator, together with the result of the presiding video coding and the automatic evaluation of the second phase two. The operator must then preferably select only one option from the predetermined alternatives. Additional context information is subsequently available for further automatic evaluation. That is to say, the number of address entries to be considered is limited by the number of candidates obtained through the extraction coding. It can be assumed that the correct address is among these candidates. The house number is normally also known.

The further video coding of such address information, which was not evaluated completely during the presiding phases, is preferably used to process unclear results of the extraction coding or additional sorting-relevant information on the addressee line. The operator is preferably presented with successive images of the item surface, wherein the evaluation options of the address or the addressee are shown in one window. The options can

be selected either through keyboard input of a selection number or via mouse or voice processor.

One preferred embodiment of the invention provides for an evaluation of a first component of the address information and an evaluation of a second component of the address information as well as a check of the evaluation results with respect to mutual consistency. The first component of the address information in particular can be the zip or postal code , the second component can be a street or a house number. Inconsistencies between both components may be due, for example, to reading errors or an incorrect listing of the zip or postal code. In case of a wrong information, a number of alternatives for the street name are obtained, starting with the first three or four digits of the zip or postal code. The operator performs an extraction coding of the second component of the address information, which also results in a number of suggestions for the street name. During the consistency check, only those suggestions are not rejected, for which the results of these two analyses are mutually compatible.

The aforementioned embodiment is explained in a further detail in the following with the aid of two examples. On one item, the address is listed as:

Bucklestr. 5

D-78457 Konstanz

in place of the correct address:

Bücklestr. 5

D-78467 Konstanz

In that case, "78457 Buck 5" is used to obtain entry "Buckley 5, Konstanz" from a street directory during extraction coding. This is a correct association of the incorrect zip code 78457. During the consistency check, the inconsistency of "Bucklestr." ~~A~~and "Buckley" is detected through automatic evaluation and the respective evaluation result is rejected. On the other hand, if the address line with zip code and location information is read with a high error rate OCR, whereas the street information is read with a low error rate, the operator only enters the zip code or a number of letters from the location information. It is preferable in this case if the OCR result with low error rate is given preference over the operator input. In another preferred embodiment of the invention, the information affixed to the surfaces of items is evaluated through video coding in those cases where an automatic evaluation was not successful because the address information and the addressee information could not be differentiated by the automatic evaluation device. In particular, this occurs with mail items where the addressee information is affixed immediately above or below the address information, e.g. with mail from Denmark. Since the item surface is displayed for the operator during the video coding, it is normally easily possible to identify the respective information as address information or addressee information and, if necessary, to perform an extraction coding.

Patent Claims

1. A method for processing goods with an automatic address reading system, wherein for each item an image of the surface containing the address information is obtained for each item and is supplied to an OCR unit for the automatic evaluation device and, if the address information is not recognized unambiguously, the associated image is transmitted further to a video-coding station for video coding,

characterized in that the image of each address information that is not unambiguously recognized within a specific time interval by means of video coding is transmitted along with the information on recognized address components, obtained during the video coding, to the OCR unit for further automatic evaluation for an address interpretation.

2. A method according to claim 1, characterized in that the image of each address information that is not unambiguously recognized during the further automatic OCR evaluation for the address interpretation is transmitted along with the obtained information to a video-coding station.

3. A method according to claim 1 ~~or 2~~, characterized in that an extraction coding is carried out according to the extraction rules during the first video coding.

4. A method according to claim 2, characterized in that a selection coding takes place during the additional video coding, in such a way that a selection is made from a number of alternative evaluation results.

5. A method according to claim 4, characterized in that the alternative evaluation results are formed from the unclear results of the extraction coding.

6. A method according to claim 5, characterized in that alternative evaluation results are formed from address information, which contains additional sorting information.

7. A method ~~according to one of the~~ claims 1 ~~to 6~~, characterized in that a first component of the address information is evaluated and that a second component of the address information is evaluated and that the results of these evaluations are checked with respect to mutual consistency.

8. A method according to claim 7, characterized in that the image of any address information, which has not been recognized unambiguously within a specific time interval by means of video coding is transmitted along with the information on recognized address components, obtained during the video coding, to the OCR unit for a further automatic evaluation.

9. A method according to claim 1 ~~to 8~~, characterized in that the first automatic evaluation of the address information is performed on-line or off-line.

10. A method according to claim 1 ~~to 9~~, characterized in that the goods, for which no complete, additional automatic on-line evaluation or an evaluation through video coding of the address information has taken place, are provided with an identification marking (TID) for an additional automatic or video coding, to be performed off-line.

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11. A method according to claim 1 ~~to 9~~, characterized in that a preview coding method is used, at least for one of the video coding processes.

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12. A method according to claim 1 ~~to 11~~, characterized in that a differentiation between address information and sender information is made for the video coding.

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13. A device for carrying out the method according to claim 1 ~~to 12~~, comprising an automatic address reading system which has

- a device for obtaining the images of the goods (120),
- an OCR processor (130) for the automatic evaluation of address information containing images of the item surfaces,
- a device for video coding the images of item surfaces, containing the address information, by using at least one video-coding station (200);
- an image controller (170) for controlling the data flow between the OCR processor (130) and the device for video coding, characterized in that the image controller (170) is designed such that the image of any complete address information, which is not recognized unambiguously within a specific time interval, is transmitted along with the information on address components, obtained through the video coding, to the OCR processor (130) for a further automatic evaluation of the address interpretation.

14. A device according to claim 13, characterized in that a device is provided for affixing identification information (TID) to goods where the address information has not been evaluated completely on-line.

Add Cl 7